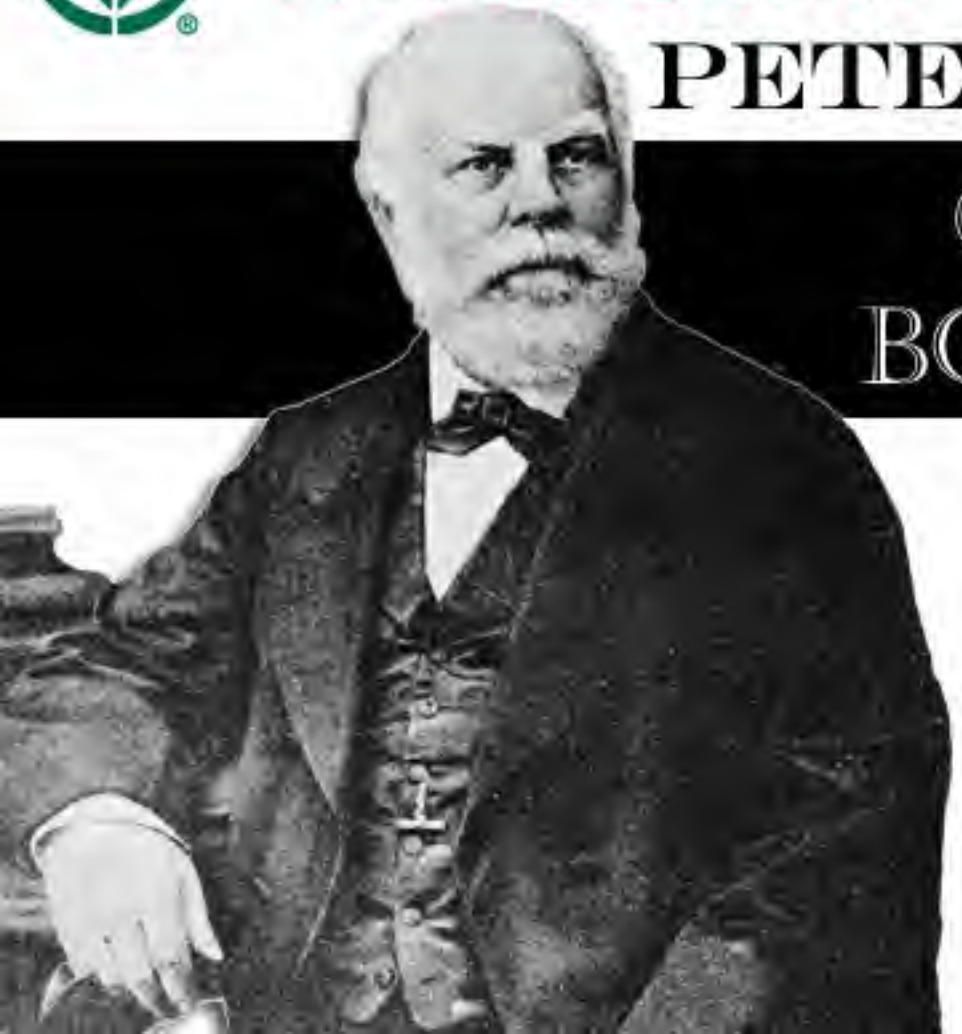
Missouri Botanical Garden
Peter H. Raven Library

George Engelmann Botanical Notebooks



Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

Isoëtes
andicola

Hurstpierpoint. Sussex.
May 6th, 1866.

Sir,

I regret having had to leave your letter so long unanswered, but it is only on very rare days that I am well enough to be able to sit up to write.

The Isoëtes, no. 1081 of my coll., was gathered in September, 1850, on the shores of the river Tapajoz, near its mouth, and you will find a notice of it in Hooker's 'Journal of Botany' for August, 1851, ~~at~~ at page 246, and of the plants that accompany it at p.p. 240, 241, of the same.

At the commencement of the dry season, that is, about the summer solstice (June) the Tapajoz begins to fall, and its receding waters leave exposed a broad beach of white sand. On this beach, especially at the bottom of deep bays, about the mouth of creeks, and by certain little lakes adjacent to the river, thousands of minute annuals (or rather ephemerals) spring up, flower, and ripen their seeds, their whole existence enduring but for a few days; and by the time the sand is quite dried up by the scorching sun they have withered away. Of these fairy little plants the most notable are Alisma ephemerum sp. n., A. tenellum Mart., Utricularia Spruceana Benth., U. viscosa sp. n., U. longiciliata DC., Nolerophila inundata ~~DC.~~ Mart.

0 1 2 3 4 5 6 7 8 9 10
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(a minute annual Melastome), and various species of Eriocaulon (Paepalanthus) and of Eleocharis (Scirpidium). Two species of Eleocharis grew along with the Isoëtes, and it was so like them that at first glance I took its for a third species, until I noted its glistening leaves. It grew half-buried in the sand.

I had rather you should call this species Isoëtes amazonica, which will indicate its habitat, and may serve to show, in conjunction with I. andina, how on the Equator this genus ranges from the torrid shores of the Amazon to the frigid paramos of the Andes.

The second species (I. andina Mfg.) was gathered in October, 1858, on the Paramo de Nába — a continuation of the southern shoulder of Chimborazo — which one crosses in travelling from Riobamba to the temperate valley of Pallatanga, on the western slope of the cordillera. At the highest point of the pass, which may be 13,000 feet (English) above the sea, the turf is decorated with large swelling tufts of Werneria humilis H.B.K. The Isoëtes, however, grows some way below the summit, in a bog at about 12,000 feet alt., where the vegetation is in great part composed of hassocks of a curious dwarf sedge (Oreobolus sp.) with rigid aloïd leaves; and (as in the case of the Amazon plants), so like the intermixed but much rarer Isoëtes, that I should have passed the latter unnoticed had not the tufts been invariably enveloped in gelatine. Other plants growing in the same bog were the elegant Gentiana cernua H.B.K., with its large pendulous red bells, Lobelia tenera H.B.K., Loricaria stenophylla Wedd. Hypericii sp. n. and Eriocauli sp. n.

The bog of Naba resembled the tourbières of Europe, in aspect, but it contained no Sphagnum — a genus of mosses entirely absent from the Equinoctial Andes. — I had time to gather only two plants of the Isoëtes, for a storm was impending, the thunder rolled above our heads, and big raindrops began to fall; so that we had to hasten forward to reach our halting-place for the night, at Pangor, two thousand feet lower down the valley.

You will perceive that this Isoëtes grew, not in water, but immersed in a gelatinous mass, evidently its own proper excretion.

I have thus given you, as well as I am able, the information you asked for.

I am just completing the distribution of my Musci Amazonici et Andini. There are a few sets left, containing about 300 species each. The price is 30 shillings the century. I did not send any announcement of my Cellular plants to Berlin, because they have never purchased there any of my phaneroganis or ferns.

Believe me to remain

Yours very respectfully,

Richard Spruce.

Prof. A. Braun.

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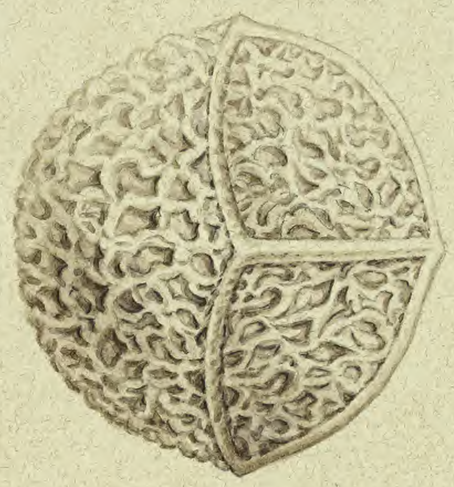

Is. Macrospora.

Is. Andina.

Is. Melanopoda.

Aries, Août 1866.

found among Braun's papers and sent to me 1877
partly drawn by Bernier
sent

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Porter return May 2 1867

[Casp. b. sp.? Lehmann = 146 Gray]

width of leaf ×60

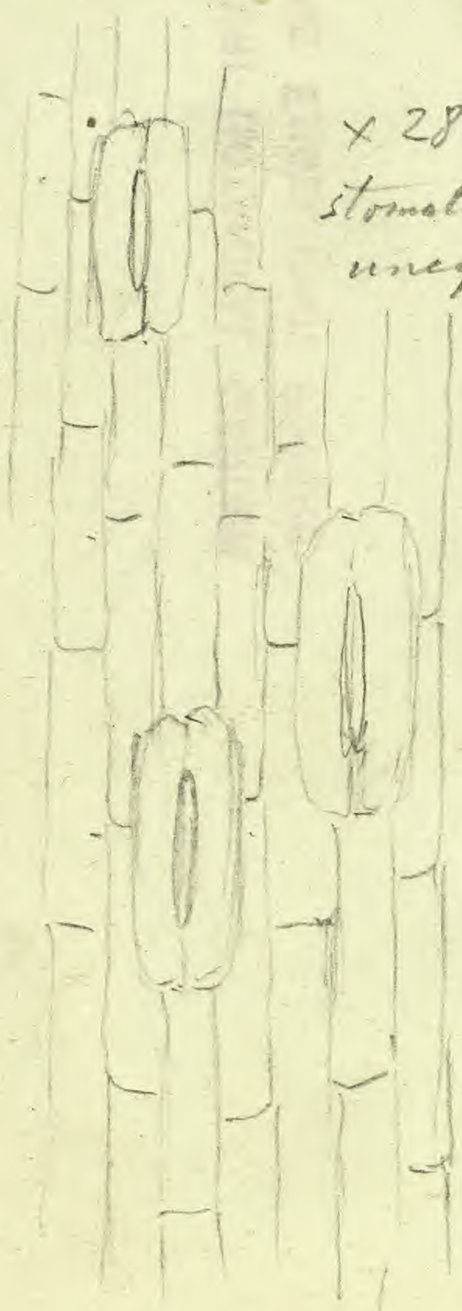
47 mm = 0.8 mm
60

×10

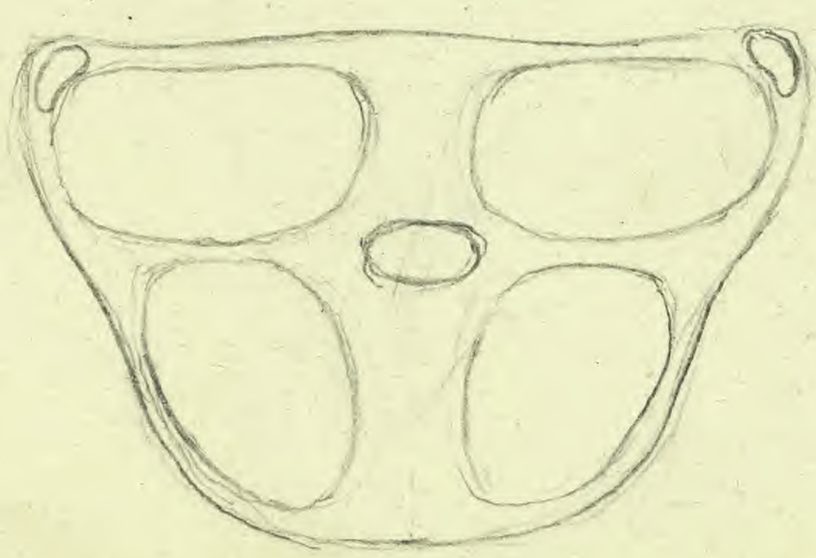
section of 0.1 mm thickness shows 2 strong distinct bundles in the upper and outer corners, but none other — median partition both very thick and equal, transverse ones very slender

×60

×280
stomata small unequal



×540



central vessels

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Fontes selecti rel non "canstus" Dec 6 1866
Montpellier DCandolle = HB Fr. 9

[HH] $\frac{30-36}{60}$ = 0,50-0,60 mm Diam of macrosp

macrosporis subsphaeroideis mechanicis
supra subreticulatis. Tuberculis infra
subinde confluentibus reticulatis
angulis prominentibus

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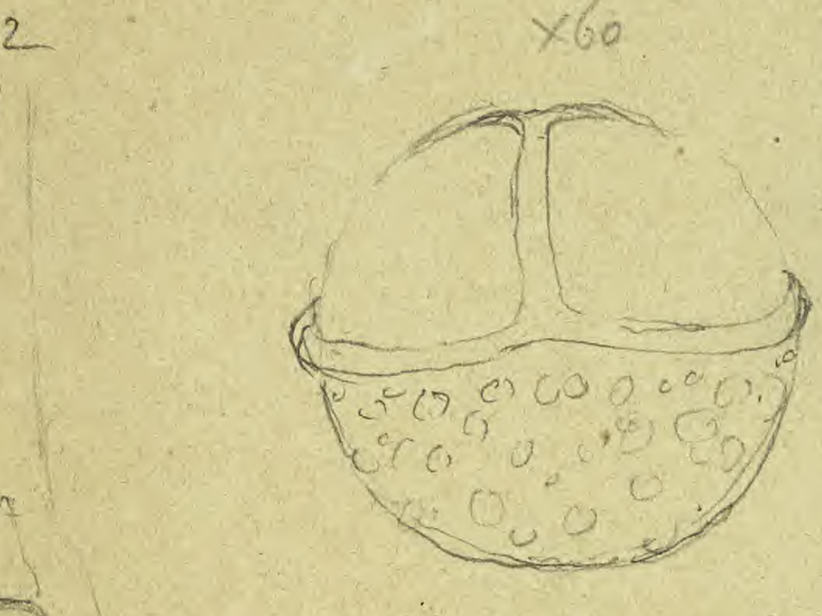
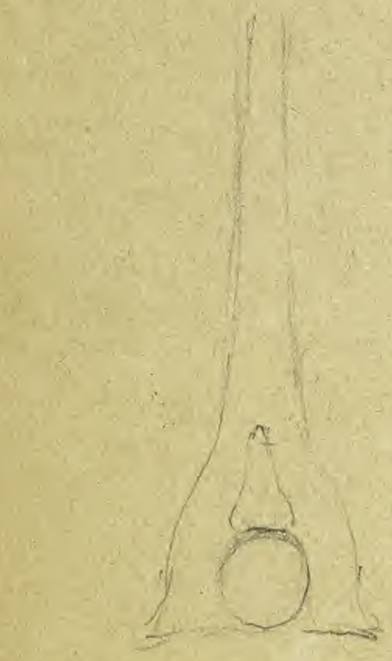
Isoetes sine dubia *I. setacea* Dec 16 1866

" Cap B. Sp ? *Lehmanni* non Capensis ! Ad2

diam. of spores $\frac{26.8-31.2}{60} = 0.45-0.52$ i.e. 46 Grey



× 2

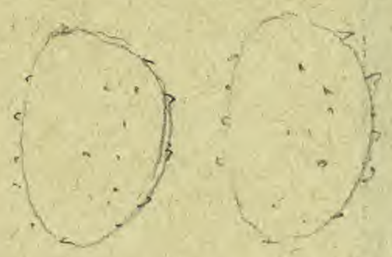


velum angustissimum

×60

Cover hemisphere
rather indistinctly warty
septum segments
smooth
angles very prominent

microspore ×415
0.031–0.034



not quite ripe
are they really spiny ?

A Braun has not known any Cape of Good Hope species !

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Boeckeria setacea

Sept 22 1865

South of Baroe

$\frac{33.5 - 38}{60}$ = 0.56 – 0.63 mm diam.

woody !

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Botrychium Brachyglossa Brn — Jan 16 1866

("Serampore" Brn) Ceylon, Griffith — Hb Gray

size and habit of the ordinary J. Ceylanica

near J. Commandelina Lin

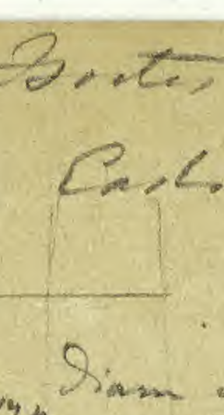
if not the same, A Braun

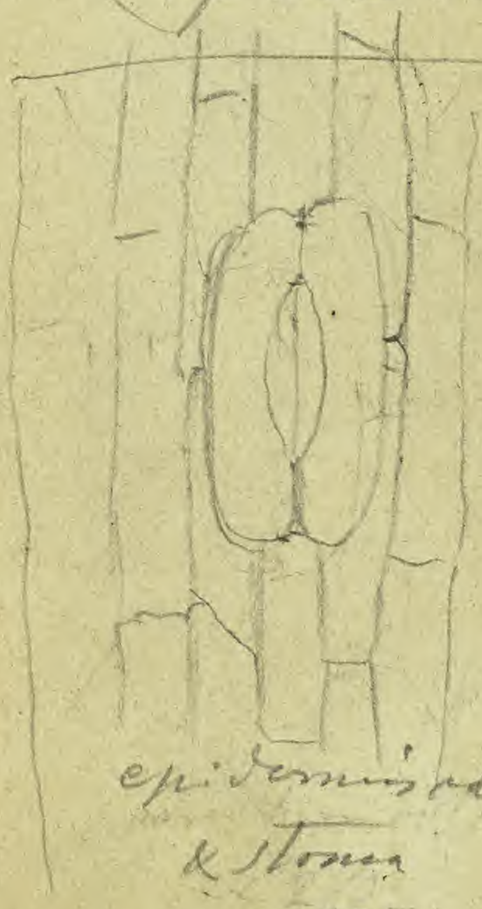
$\frac{24-32}{60}$ = 0.40 – 0.53 mm. Diam of spore

×2

Sporang cells with thin walls, white

×280





epidermis cells & stoma

×280

upper peripheral cut boundaries

full of stomata

velum angustissimum

April 14 1867

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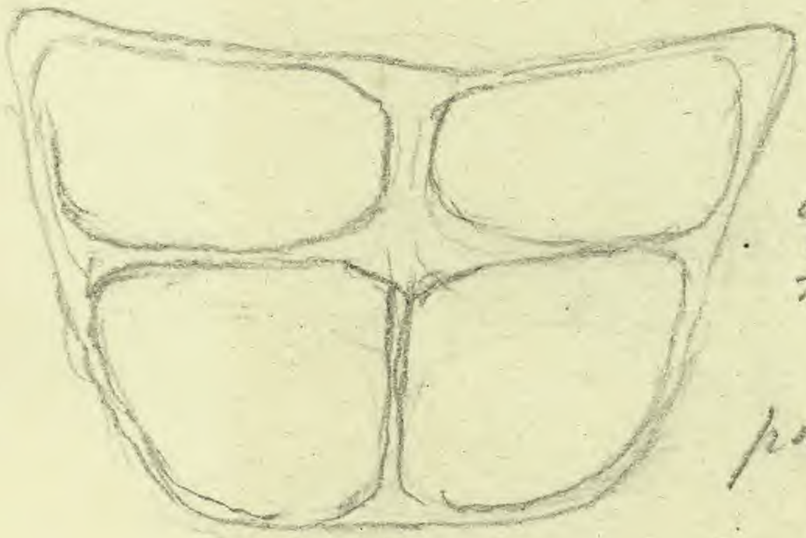
Isoetes riparia mostly from Camden April 16 1882

(Subacom I. saccharata, in Hb Martindale from Wm M Canby by Ary 1873 at Seaford, Del)

Macrospore

24 – 30 / 60 = 0.40 – 0.50 mm

×6e



anterior part of median dissepiment short and 3–4 cells thick

posterior long and 1–2 cells thick

leaf 0.4 lines wide ho basal bundles

Surface

×150

markings reticulate vermiculate anastomosing

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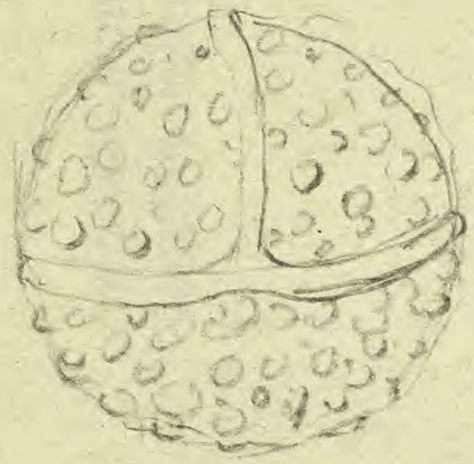
Isoetes Amazonica Braun Dec 16 1866

Santarem, Prof Para, Brazil, R Spruce = HG Gray

small plant
slender, leaves few
5–7 centim. long.
bulb 4 mm diam

Diam $\frac{26-30.5}{60}$ = 0.43–0.51 mm



×2

×415 [3 parted, Braun]

microspore 0.035–0.039 mm

velum none
leaf with microsporangia

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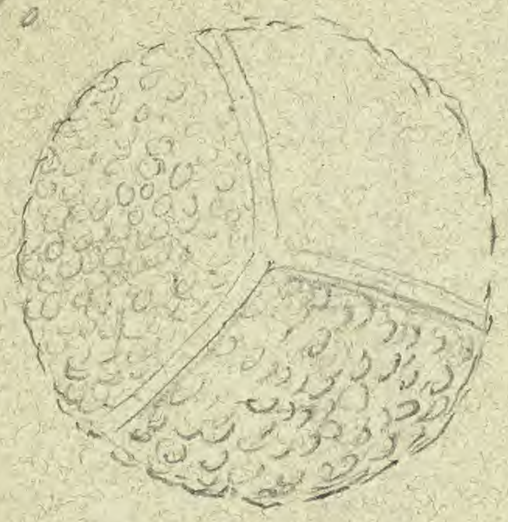
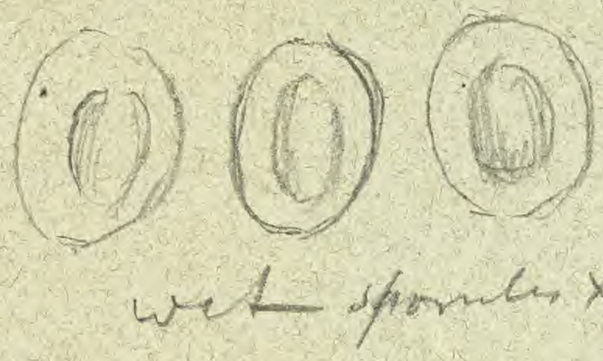
Isoetes Hystrix Dec 7 1863

1 ×60



a v. small peaty low
conto - or protuberance.

dry



wet spores × 415

Spores ×60

$\frac{105-147}{60}$ μ = 0.17–0.24 mm

$\frac{22-31}{60}$ mm = 0.36–0.52 μm

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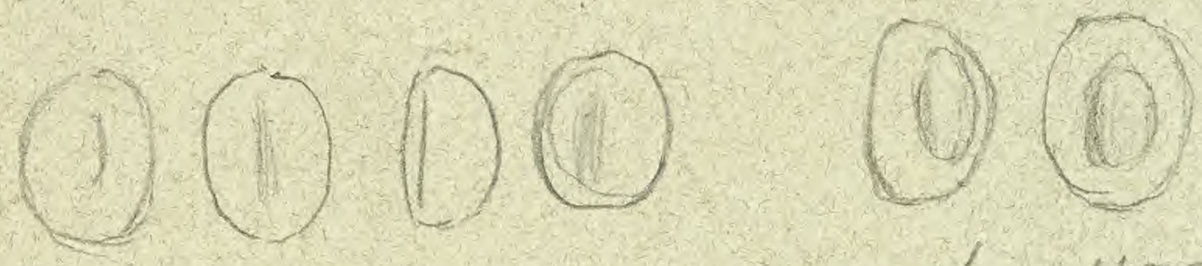
Isotes Durieui

Algiers

Dec 1 1863



Dry

wet spores x 415

Spores x60

$\frac{18.5-21\ \mu}{60} = 0,31-0.35\ \mu$

$\frac{37-42\ mm}{60} = 0.62-0.70\ mm$

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CHEMIST
ALL THE NEW REMEDIES CONSTANTLY ON HAND

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cm 0 1 2 3 4 5 6 7 8 9 10
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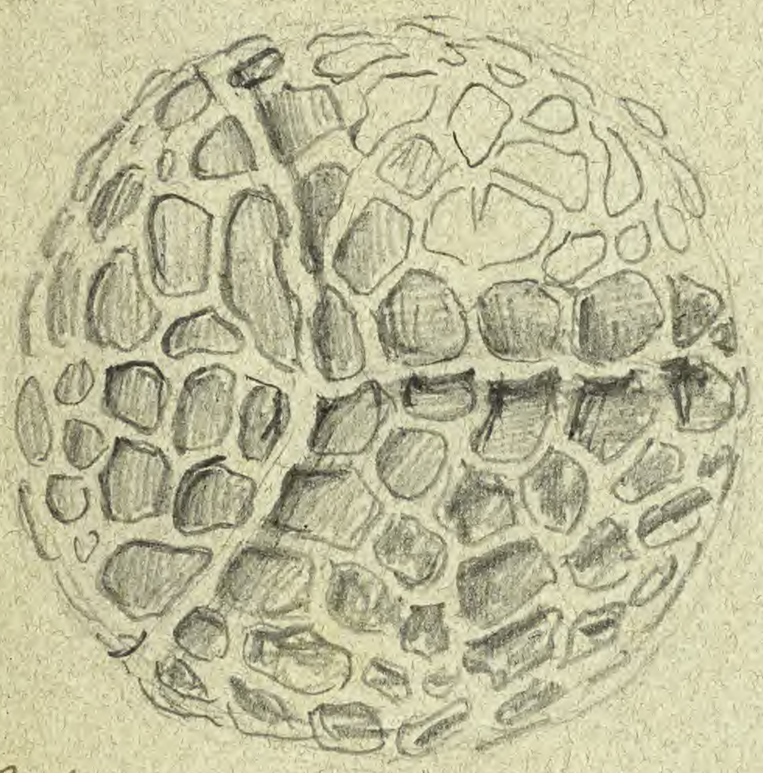
×60

Scotia Durieui ? Dec 1 1863

var byssoides ? De Notaris 1856



Ridges sometimes irregular by the grooved network on the sides

Spores ×60

$\frac{20.5-22\ l}{60} = 0.34-0.37$

$\frac{42.5-46\ mm}{60} = 0.71-0.77\ mm$

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Isoetes alpina Kirk

Lake Rotoiti, Nelson.

April 18 1902

46 Martindale

stout, leaves 6-7 inches long

Dark green

sparsely spinulose

$\frac{12.5}{415} = 0.030$ mm

×20

leaves nearly

1 line thick

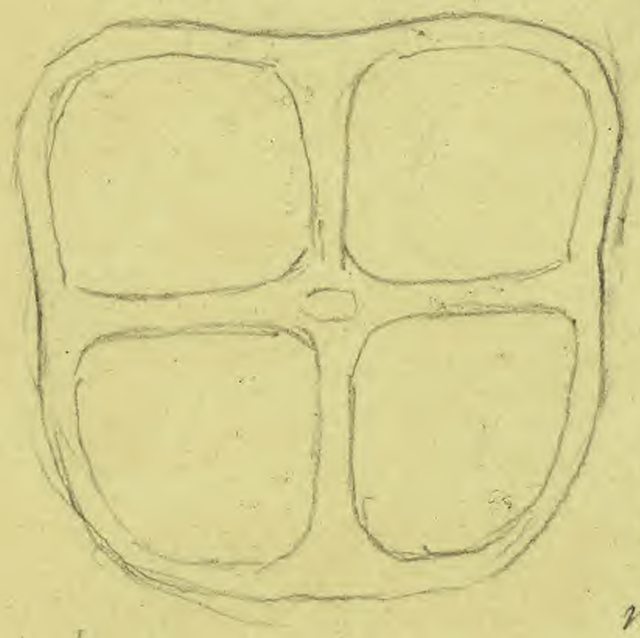
walls and diaphragm

equally thick

consisting of 3 to 4

layers of cells

no bast bundles



megaspore

ivory smooth

$\frac{24.5 - 27.5}{60} = 0.41 - 0.46$ mm

×2

Eight oval obtuse (entire!)

velum entire

epidermis

×150

no stomata

POSMAN HERB.

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Leitch & Cortlies

DRUGGISTS

South West Corner Fifth and Market Streets.

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"Lorea, lanuta ?"

Dec 16 1866

Tasmania R C Gunn ex HB Hook ⁊ HBGray

Lindley J. Miller, ex Hb Hook Botanical Journal 536. (1862.)

leaves 30–35 centimetres long, broadly ovate, lower fourth margins divaricate, apex acuminate, lower surface with long microscopic

0.028 – 0.031 mm.

$\frac{31.5 - 39}{60} = 0.52 - 0.66$ mm

diam of margins

vdum angustissimum

lingula maxima

no stomata

J. elatior J. Miller

but Lit Hb. Hook this sp. is presented "cult by Archer," not by Gunn — Gunn's is different.

A. Braun - Lit

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Boeteo Malinverniana Nov. 18 1866

Dr Atkinson, Oldenico May 1863

diam of very young spores

$\frac{31-34}{60}$ = 0,52 - 0.57 mm

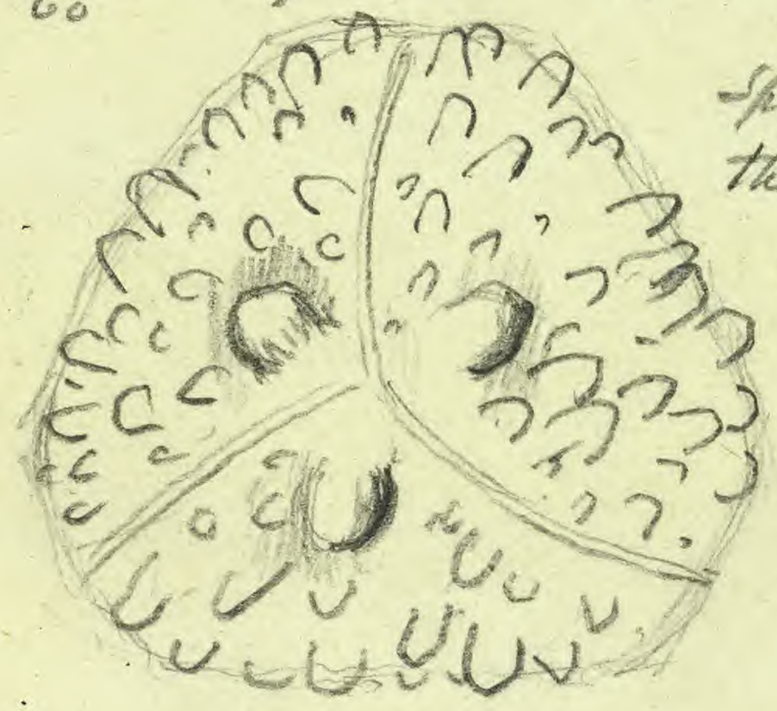
diverse diameters of same spore

$\frac{41-45}{60}$ 0.69 - 0.75 mm

a single old spore attached to the tissue or roots of the plant

×60

Spores very unripe only a thin white smooth membrane, which shows 3 lines



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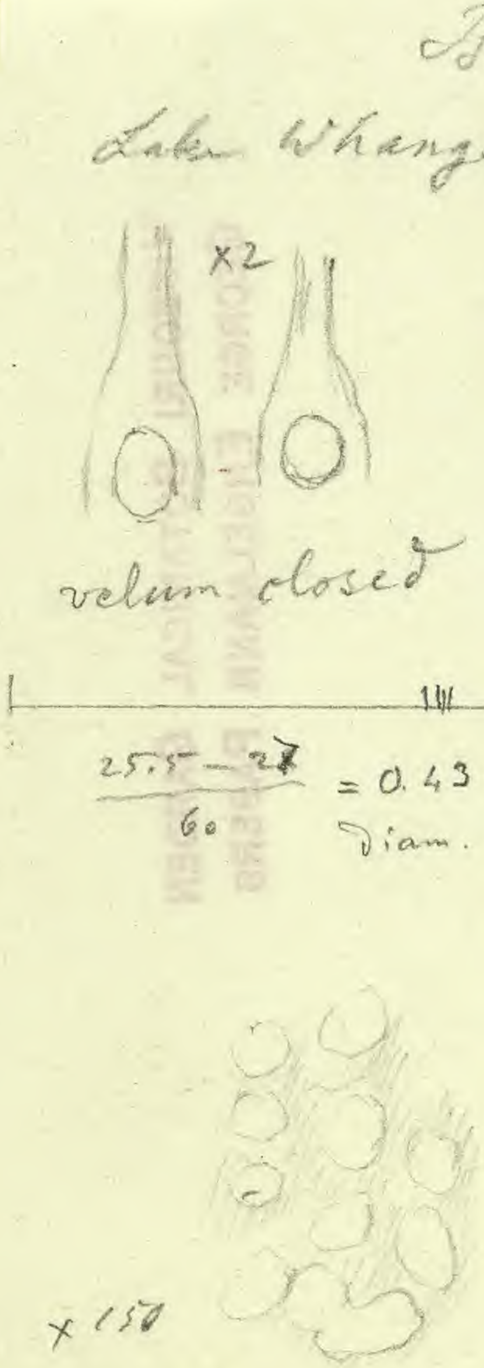
Scotia Kirkii A Braun April 19 1882

Lake Whangape New Zealand H.H. Martindale

velum closed

small bodies filling a macrosporangium among macrospores. a fungus? forming a yellowish brown powder

disappointingly thin, only about 3 layers of cells — no bastard tissue as in stomata!



very low warts on macrospores, scarcely elevated

$\frac{25.5-27}{60} = 0.43-0.46$ mm
Diam. macrosp.

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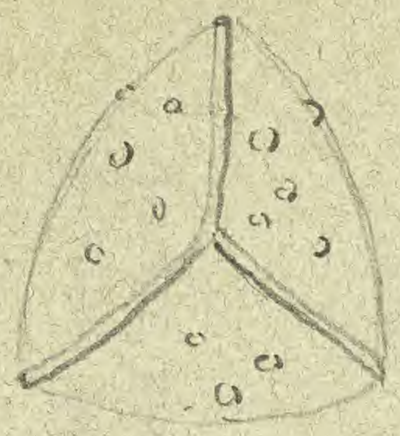
T. semisiriae

Nov 26 1863

Texas

X60



(T. longissima & T. teretella
have the same spores
~~(spores of these two species~~)

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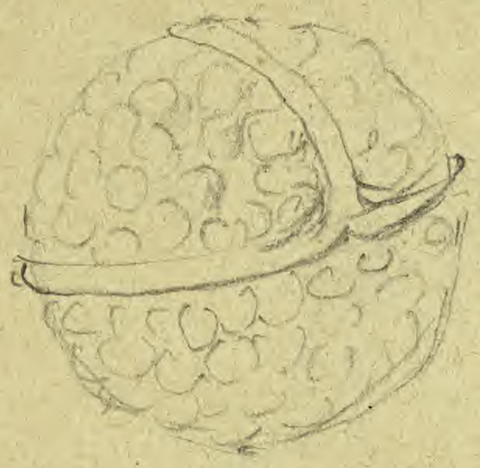
Ic. Peralderiana Gar Dec 16 1865

Kabylie orientale 1. Aug 1861

E Cosson = Hb Gay

1 IIIII

$\frac{22.7 - 27.1}{60}$ = 0.38 – 0,46 mm diam



flattened reticulations
tubercles

×415

0.032 – 0.036 mm

A Form. P. D. orlata Braun

f. de Braun

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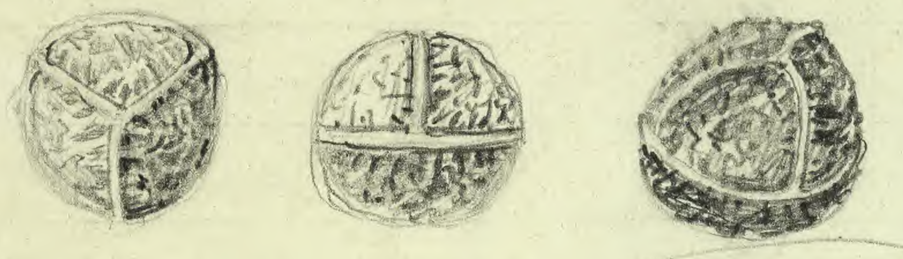
0.0 E.1 ×32. Isoetes

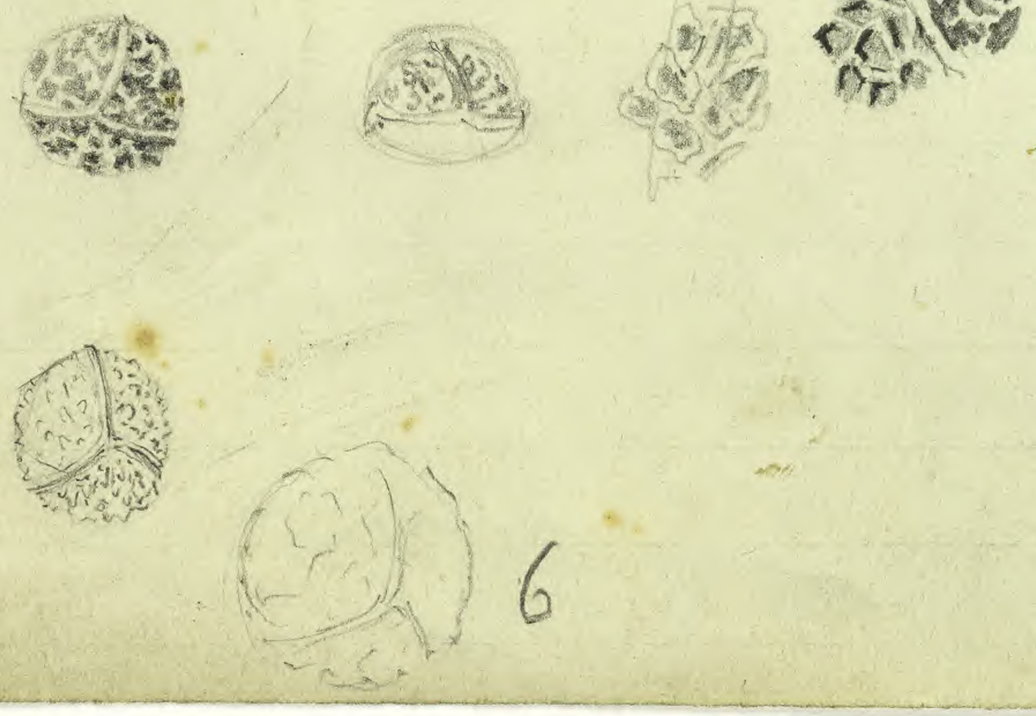


Germany 5

Philadelph 7

Delaware 4

1.4 I. Engelmanni
5.6 ~~obtusa~~ I. Lacustris
7. I. riparia
8 I. Braunii



Illinois 1

8 Wisconsin

6

0.1. E.1 ×60 Jan. 1859

Sporidia

17,5 L. $\frac{36^{mm}}{60} = 0.60$

16 III $\frac{34^{mm}}{60} = 0.57$

12,5 III $\frac{26^{mm}}{60} = 0.43$

14,5 III $\frac{31^{mm}}{60} = 0.52$

19,5 III $\frac{41.5^{mm}}{60} = 0.69$

12,5 III $\frac{26^{mm}}{60} = 0.43$

majuscula ~~farinoso~~ reticulata
I. Lacustris

majuscula, grosse ~~farinoso~~ reticulata conspersa
I. riparia Wisconsin

parva tenuiter ~~farinosa~~ ~~conspersa~~ reticulata
I. Engelmanni

I. Engelmanni
parva tenuiter reticulata

I. ~~riparia~~ Braunii
parva tenuiter farinacea - conspersa
Wis

6 Ohio

Wis farinoso reticulata I. Lacustris

0 1 2 3 4 5 6 7 8 9 10
cm
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MISSOURI BOTANICAL GARDEN

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

13678.

MISSOURI BOTANICAL GARDEN
0 1 2 3 4 5 6 7 8 9 10 cm
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